

**CHECKOUT SYSTEM INCLUDING
A PRODUCT SECURITY LABEL DEACTIVATOR**

Background of the Invention

5 The present invention relates generally to a checkout system, and more particularly to a checkout system including a product security label deactivator.

10 A self-service checkout system is operated by a customer with little or no aid from a checkout clerk. Hence, during operation of a self-service checkout system, customers scan individual items for purchase across a scanner.

15 Some checkout systems are convertible between assisted and unassisted modes of operation. An example of a convertible checkout system can be found in U.S. Patent 6,213,395, which is hereby incorporated by reference.

20 Security labels limit product theft. Security labels are affixed to products and must be deactivated at the time of purchase in order to prevent an alarm from being sounded as the customer exits. During the payment process, a checkout clerk at an assisted-service checkout counter deactivates the security labels by placing them near a product deactivator in the checkout counter.

25 Failure to deactivate a label could lead to customer embarrassment and accusations of theft. Therefore, it would be desirable to provide a checkout system which includes safeguards to reduce incidents involving failure to properly deactivate a security label on a purchased item.

Summary of the Invention

In accordance with one embodiment of the present invention, a checkout system including a product security label deactivator is provided.

5 The checkout system includes a computer, a barcode reader coupled to the computer for reading a barcode label on an item, and a security system coupled to the computer and activated by the barcode reader following reading of the barcode label including a field generator for deactivating a
10 security label on the item, and a sensor for sensing placement of the item adjacent to the field generator. The security system initiates display of a message instructing the operator to place the item adjacent the field generator until the sensor senses the placement.

15 It is accordingly an object of the present invention to provide a checkout system including a product security label deactivator.

It is another object of the present invention to provide a checkout system including a product security label
20 deactivator with a sensor for assisting operators with proper deactivation of security labels.

It is another object of the present invention to provide a checkout system including a product security label deactivator with a sensor for assisting self-service
25 customers with proper deactivation of security labels.

It is another object of the present invention to provide a convertible checkout system including a product security label deactivator with a pop-up housing containing a sensor for assisting only self-service customers with
30 proper deactivation of security labels.

Brief Description of the Drawings

Additional benefits and advantages of the present invention will become apparent to those skilled in the art to which this invention relates from the subsequent description of the preferred embodiments and the appended claims, taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a perspective view of a retail checkout system configured in a self-service mode;

Fig. 2 is a view similar to Fig. 1, but showing the checkout system configured in an assisted-service configuration;

Fig. 3 is an exploded view of security label deactivator, including a pop-up housing; and

Figs. 4A and 4B illustrate the operation of a latch within the pop-up housing.

Detailed Description of the Invention

Referring now to Figs. 1 and 2, there is shown a retail checkout system 10 for use in a retail business such as a grocery store. The checkout system 10 is configured to perform a number of retail functions such as assisted checkout functions and unassisted or "self-service" checkout functions.

Checkout system 10 includes a pre-scan area 12, an itemization area 14, a payment area 16, and a post-scan area 18. The pre-scan area 12 includes an item transport mechanism such as an input belt mechanism 20 which includes an input belt 22. Input belt mechanism 20 is utilized to convey items for purchase toward the itemization area 14 in

order for the items to be scanned by a user of the checkout system 10.

Itemization area 14 includes scanner 24 and a product scale 26. Scanner 24 conventionally scans or reads a product identification code such as a Universal Product Code (UPC), industrial symbol(s), alphanumeric character(s), or other indicia associated with an item to be purchased. One scanner which may be used in the present invention is a model number 7875 bi-optic scanner which is commercially available from NCR Corporation of Dayton, Ohio.

Scanner 24 includes a first scanning window 24a and a second scanning window 24b. First scanning window 24a is disposed in a substantially horizontal manner, whereas second scanning window 24b is disposed in a substantially vertical manner.

Scanner 24 and product scale 26 are movably mounted to terminal base 34. In particular, scanner 24 and product scale 26 are rotatably mounted to a support platform such as a sliding drawer assembly 38. Use of the sliding drawer assembly 38 allows the scanner 24 and the product scale 26 to be rotated relative to the terminal base 34 so as to be operated by either a customer or a checkout clerk.

Checkout system 10 has a customer side 40 and an employee side 42. More specifically, terminal base 34 divides the checkout system 10 into the customer side 40 which is the side of the checkout system 10 where the customer is positioned during a checkout transaction, and the employee side 42 which is the side of the checkout system 10 where retail personnel such as a checkout clerk is located during a checkout transaction. A customer is positioned on the customer side 40 of the checkout system 10 irrespective of whether the system 10 is being operated to

perform an assisted checkout transaction or a self-service checkout transaction, whereas retail personnel is at all times positioned on the employee side 42 of the checkout system 10. Use of the rotating scanner 24 facilitates such

5 "same side" operation of the checkout system 10.

Itemization area 14 also includes security deactivation device 36. Security deactivation device 36 is provided to deactivate or otherwise disable security labels associated with an article surveillance system. In particular, certain

10 items sold by the retailer may have an electronic or magnetic label secured thereto. Such labels trigger an alarm if the item is taken from the retailer's store without the label being deactivated or otherwise disabled beforehand.

Security deactivation device 36 includes a field

15 generator 36a and an item sensor 36b. Field generator 36a deactivates security labels and is activated by scanner 24. Field generator 36a may produce a magnetic or electromagnet field.

Sensor 36b senses the presence of an item adjacent

20 field generator 36a, in a location sufficient for deactivating a security label on the item. Sensor 36b is preferably an ultrasonic sensor.

In the illustrated embodiment, sensor 36b is located in pop-up housing 36c. Alternatively, for other checkout

25 counter configurations, sensor 36c may be mounted in a raised position in permanent fashion.

With reference to Fig. 1, housing 36c is in a raised position during a self-service transaction. A self-service customer scans an item using scanner 24. After scanner 24

30 read a barcode label on the item, it activates field generator 36a. The customer places the item on or in close

proximity to field generator 36a in order to deactivate a security label on the item.

Sensor 36b fails to produce a signal if the customer fails to place the item within the deactivation range of field generator 36a. In such an instance, interface terminal 78 prompts the customer to swipe the item over field generator 36a until sensor 36b produces a signal.

With reference to Fig. 2, pop-up housing 36c is shown in a recessed position during an assisted-service transaction. However, as indicated above, sensor 36c is suitable for operation in other checkout counter configurations during assisted-service operation, particularly those configurations in which operation is limited to one side.

Payment area 16 includes the system components necessary to allow a customer to perform retail finalization functions such as tendering payment for items for purchase and printing of transaction receipts. In particular, payment area 16 includes an electronic payment terminal 44 having a card reader and keypad, a pair of currency acceptors such as a coin acceptor 46 and a bill acceptor 50, a corresponding pair of currency dispensers such as a coin dispenser 48 and a bill dispenser 52, a receipt printer 54, and a coupon acceptor 55. As shown in Fig. 1, the system components associated with the payment area 16 are positioned to face the customer side 40 of the checkout system 10 so as to be accessible to a customer during a checkout transaction.

Post-scan area 18 includes an item transport mechanism such as a takeaway belt mechanism 56 having a takeaway belt 58. Moreover, the post-scan area 18 includes a self-service bag well 60 (Fig. 1) and an assisted bag well 62 (Fig. 2).

Bag wells 60, 62 are provided to accommodate one or more grocery containers such as grocery bags.

Takeaway belt mechanism 56 is provided to transport items which have been scanned with the scanner 24 or otherwise entered into the checkout system 10 to a bagging counter 66 where the items are placed into grocery bags or the like by a bagging clerk. Hence, as described herein, self-service bag well 60, assisted bag well 62, and bagging counter 66 define the three bagging stations associated with checkout system 10.

Post-scan area 18 also includes a security scale 68. Security scale 68 is a weight scale which monitors the weight of items placed in either self-service bag well 60 or assisted bag well 62.

Post-scan area 18 further includes a set-aside shelf 70. Set-aside shelf 70 is positionable in either an assisted shelf position or a self-service shelf position. Set-aside shelf 70 is provided to allow a user of the system 10 to set an item aside once the item has been scanned or otherwise entered into system 10, but prior to placing the item into a grocery bag within one of bag wells 60, 62.

Checkout system 10 also includes a pair of user interface terminals for receiving input from and providing information to a user. In particular, checkout system 10 includes personnel interface terminal 76 (Fig. 2) and an interactive customer interface terminal 78 (Fig. 1).

Personnel interface terminal 76 includes a display monitor 76a and a keypad 76b (Fig. 2). Transaction information is displayed to a checkout clerk via display monitor 76a during operation of checkout system 10 by the clerk. The clerk may manually enter retail information such as item codes and quantities into checkout system 10 by use

of keypad 76b associated with the personnel interface terminal 76. One integrated terminal which is particularly useful as the personnel interface terminal 76 of the present invention is a Dynakey terminal which is commercially
5 available from NCR Corporation. Personnel interface terminal 76 is provided for use by a checkout clerk when checkout system 10 is being operated in its assisted mode of operation. Accordingly, personnel interface terminal 76 is generally not utilized by the customer when the checkout
10 system 10 is being operated in its self-service mode of operation.

Interactive customer interface terminal 78 includes a display monitor 78a which is provided to display retail information to the customer during operation of checkout
15 system 10 in either its assisted mode of operation or its self-service mode of operation. Moreover, instructions are displayed on display monitor 78a which assist or otherwise guide the customer through operation of the checkout system 10. Such instructions are particularly useful when checkout
20 system 10 is being operated in its self-service mode of operation.

Display monitor 78a is preferably a known touch screen monitor which can generate data signals when certain areas of the screen are touched by a customer. Hence, display
25 monitor 78a may be utilized by the customer to input information into the checkout system 10. For example, the customer may manually enter retail information such as item codes and quantities into the checkout system 10 by use of the touch screen associated with display monitor 78a. The
30 customer may indicate a preferred method of payment (e.g. cash, credit, or debit card) by touching the appropriate area of the touch screen.

Interactive customer interface terminal 78 is preferably embodied as a stand-alone, kiosk-type device which is, in essence, a modified flat panel personal computer (PC) which includes a number of components commonly associated therewith. One such stand-alone, kiosk-type device which is particularly useful as an interactive customer interface terminal is a Model 7401 information terminal which is commercially available from NCR Corporation.

As shown in Fig. 1, checkout system 10 also includes a status light device 84 and a paging device 86. The status light device 84 and the paging device 86 are provided in order to notify store personnel, such as a customer service manager, if intervention into the current checkout transaction is needed.

Checkout system 10 also has a video system 94. Video system 94 includes a video camera such as a digital video camera 94a (Fig. 1). Video system 94 is included to provide security during operation of the checkout system 10.

Turning now to Fig. 3, security deactivation device 36 is shown in more detail.

Device 36 includes frame assembly 100, which surrounds field generator 36a and pop-up housing 36b. Frame assembly 100 provides a finished look to device 30 and fits over cavity 120.

Pop-up housing 36b includes lid 102, which contains latch 116. Latch 116 allows housing 36b to be raised and lowered.

Pop-up housing 36b also includes front panels 104 and 106. Panel 104 is visible when pop-up housing 36b is in the raised position and includes sensor 36c.

Panel 106 remains recessed at all times and includes lock 108. Lock 108 engages flange 118 to retain pop-up housing 36b in the raised position. Lock 108 is biased by spring 122 anchored to panel 106.

5 Flange 118 is generally L-shaped and is mounted to retaining assembly 110, which defines a channel for pop-up housing 36b within cavity 120. Retaining assembly includes side walls 112 and center wall 114 fastened between side walls 112. Flange 118 is mounted to center wall 114 on a
10 side facing lock 108.

Turning now to Figs. 4A and 4B, operation of lock 108 and flange 118 is illustrated in more detail.

With reference to Fig. 4A, lock 108 is shown in a position resting on flange 118. Lock 108 is in this position
15 when pop-up housing 36b is in a raised position during the self-service mode of operation. Shaft 124 mounts lock 108 to panel 106 and is coupled to latch 116.

With reference to Fig. 4B, lock 108 is shown in a released position following actuation of latch 116. After
20 lock 108 rotates above flange 118, pop-up housing 36b may be lowered into cavity 120.

To raise pop-up housing 36b, an operator engages latch 116, pop-up housing 36b, and releases latch 36b to the position in Fig. 4A.

25 Although the present invention has been described with particular reference to certain preferred embodiments thereof, variations and modifications of the present invention can be effected within the spirit and scope of the following claims.